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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,542	12/02/2004	Osamu Ochino	Q85102	6989

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EXAMINER	
KNABLE, GEOFFREY L	

ART UNIT	PAPER NUMBER
1733	

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/516,542	OCHINO, OSAMU	
	Examiner	Art Unit	
	Geoffrey L. Knable	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-13 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-13 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 12-2-04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Claims 6 and 11 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The change to "sulfonamide" in claim 6 and the same language is claim 11 is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention, i.e. it is considered to be new matter. It appears that the original language was correct.

2. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 3-5, it is not entirely clear what part of the tire is formed by "spirally winding a band-shaped uncured rubber compositions extruded ... to form a rubber member having a given sectional shape (so called core shaping)" - i.e. is this defining how the belt is formed or is this referring to other (e.g. rubber only) parts of the tire? Although it would appear from the context given that this is referring to the belts, this would present an inconsistency with the later parts of the claim where reference is made to different ways to form the belt layer, it appearing that at least some of these would not be consistent with an extrusion formation. Further, if this is directed to forming the belt, then the claimed spiral winding could only form belt layers with

essentially zero degree layers - is this what is intended or is this referring to other parts of the tire (i.e. other than the belt)? Along the same lines, it is not clear what "so called core shaping" is. Clarification of these issues is required in order to understand the intended scope of these claims

In claim 1, lines 6-9, reference is made to "successively laminating," "affixing" and "during the shaping and affixing it" - it however is not entirely clear what steps are being referenced here. For example, are these referring to steps to form a subcomponent or are they referring to actually steps of building the tire (i.e. are the "laminating" or "affixing" steps referring to laminating or affixing to the other parts of the tire being built or simply laminating/affixing cord and rubber to each other)? Further, what is "the shaping" in line 9 (no clear antecedent being established for this).

These ambiguities make it very difficult to understand exactly what method processing is encompassed by the present claims, this necessitating alternative application of several primary references to address possible interpretations of these requirements.

Claim 2 refers to the properties being after vulcanization - clarification is required as to whether this also applies to the viscosity as it would not seem to but the claim at present can be read to say that all the properties *including viscosity* are after vulcanization.

3. Claims 1 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over at least one of [Laurent (US 4,963,207), Mitsuhashi et al. (US 6,576,077) and GB

1,487,426 to Bekaert] taken in view of Sandstrom et al. (US 5,394,919) or Ravagnani et al. (US 4,239,663).

As already noted, it is not entirely clear whether the present method claims are requiring extrusion and spiral winding of non-reinforced rubber materials to form the tire and/or whether these require extrusion and spiral winding of the rubber/cord in the two belt layers. In any event, it is well known in this art during the building of a tire to extrude and spirally wind various non-reinforced tire layers (e.g. note Laurent as well as Mitsuhashi et al.) as well as to extrude and spirally wind steel cord belt layer(s) (note GB '426 to Bekaert). Thus, it is considered that the basic methodology as claimed represents conventional tire building, it also being *extremely* well known to use steel cords (embedded in rubber as typical) for tire belts. These teachings however relate principally to methods of making tires not specifics of the compounding of the rubbers used and thus they do not suggest a compound as claimed for the belt coating rubber.

As to the claimed composition for the coating rubber for the steel belt layer, in view of each of Sandstrom et al. and Ravagnani et al., it is considered to have been obvious to use a coating compound for steel belts that includes a compound/resin having a melting/softening point as claimed. In particular, Sandstrom et al. is directed to desirable rubber compounds for steel cord reinforced tire components such as tire belts and in particular, suggests inclusion of 0.1-10phr dithiodipropionic acid having a melting point of 153-159 degrees C (esp. col. 3, lines 44-46) in the rubber. Likewise, Ravagnani et al. is also directed to desirable rubber compounds for steel cord reinforced tire plies and in particular, suggests inclusion of 0.5-8 phr PABA having a melting point of 188-

189 degrees C (esp. col. 2, lines 30-35) as well as 1-10 phr hydrocarbon resin with a softening point of 100-110 degrees C (esp. col. 3, lines 49-50). Insofar as each of the rubber compositions include amounts of a compound or resin that meets the present claim requirements and are expressly described as desirable for steel cord reinforced tire plies or belts, it would have been obvious to use such with any steel cord ply for only the expected results. As to claims 6-8, sulfur and sulfenamide accelerators as claimed are well known and obvious, the claimed type being also well known and obvious in this art. Further, use of cobalt compounds is also well known and obvious especially for steel cord coating rubber - e.g. note also col. 6, lines 27+ of Ravagnani et al. evidencing the well known and conventional nature of such (although 1-5 phr is suggested, the Manobond C is only 16 or 18% Co and thus amounts of cobalt as claimed would be within these teachings).

4. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over [Laurent (US 4,963,207), Mitsuhashi et al. (US 6,576,077) and GB 1,487,426 to Bekaert] taken in view of EP 481080 to Nakagawa et al. and (for claims 2 and 9-13 only) optionally further in view of at least one of [Sharma (US 4,615,369) and Vasseur (US 5,871,597)].

Laurent, Mitsuhashi et al. and GB '426 are applied for the same reasons noted above, it further being again noted that it is extremely well known to use steel cords (embedded in rubber as typical) for tire belts. These teachings however relate principally to methods of building tires and not compounding for the belt layers and thus they do not suggest a compound as claimed.

As to the claimed composition for the coating rubber, EP '080 to Nakagawa et al. is directed to desirable rubber compounds for steel cord reinforced tire components such as tire belts and in particular, suggests inclusion of 0.05-6.0 phr of a bismaleimide (including a phenylene bismaleimide - e.g. page 5, lines 1-15 as well as Tables 11 and 13), it being considered reasonable to expect that in view of the apparent indication in the present specification that phenylene bismaleimide's are suitable and effective as the added compound that it would satisfy the claimed very broad requirements with respect to melting/softening point. Insofar as the rubber compositions suggested by EP '080 may include amounts of a bismaleimide compound/resin that would reasonably be expected to meet the present claim requirements, these compounds being expressly described as desirable for steel cord reinforced tire plies or belts, it would have been obvious to use such with any steel cord ply for only the expected results.

As to claim 2, EP '080 suggests a minimum 100% modulus of 20 kg/cm^2 for the coating rubber (~2 MPa) as well as exemplary values in excess of the claimed 5 MPa lower limit (e.g. examples 45, 48, 50). The viscosity and elongation at break are not characterized in the reference but it is submitted that almost all usable tire rubber compounds would have been expected to exceed the claimed 200% elongation at break limit as would have been readily apparent to the ordinary artisan. Further, the ordinary artisan would have been expected to understand the elongation requirements for tire belts and been able to select accordingly for only the expected results though only routine optimization. Note also optionally applied Sharma (esp. Table VIII; 5 MPa=725 psi) and Vasseur (esp. Tables II, IV, V), which are directed to coating rubbers for steel

belts, and suggest suitable and effective belt coating compositions that meet the claimed modulus (100 % stress) and break elongation requirements, this providing further evidence that the artisan would have found it obvious to select values as claimed. Likewise, the viscosity chosen would seem a parameter within the routine selection of the artisan dictated by the application method chosen. In other words, extrusion processing of tire compounds is extremely well known and certainly well characterized by the artisan - that a certain upper limit on viscosity and thus workability of the compositions should be defined would therefore only represent routine and obvious selection by the artisan. Further, given the known fact that tire belt compounds can be conventionally extruded (e.g. GB '426 to Bekaert), ensuring that the viscosity is such that it can be suitably worked in the extruder would have been obvious and been expected to lead to values consistent with the claimed upper limit leading to only the expected results. As to claims 6 and 11, the exemplified accelerator (Nocellar DZ - Tables 10/12) is apparently the same as that claimed.[1] As to claims 7, 8, 12 and 13, note e.g. example 44 in EP '080.

5. Claims 1 and 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over [Laurent (US 4,963,207), Mitsuhashi et al. (US 6,576,077) and GB 1,487,426 to Bekaert] taken in view of Grimberg et al. (US 2003/0221760) or Uchino et al. (US 2002/0088522).

Laurent, Mitsuhashi et al. and GB '426 are applied for the same reasons noted above, it further being again noted that it is extremely well known to use steel cords

[1] E.g. note paragraph [0065] Uchino et al. (US 2002/0088522).

(embedded in rubber as typical) for tire belts. These teachings however relate principally to methods of building tires and not compounding for the belt layers and thus they do not suggest a compound as claimed.

As to the claimed composition for the coating rubber, Grimberg et al. is directed to desirable rubber compounds for steel cord reinforced tire components such as tire belts (6) and in particular, suggests inclusion of 0.1-20 (preferably 1-8) phr of a bismaleimide (including a phenylene bismaleimide - esp. paragraph [0063] to [0067]), it being considered reasonable to expect that in view of the apparent indication in the present specification that phenylene bismaleimide's are suitable and effective as the added compound, that it would satisfy the claimed very broad requirements with respect to melting/softening point. Similarly, Uchino et al. is directed to desirable rubber compounds for steel cord reinforced tire components such as tire belts and in particular, suggests inclusion of 0.1-5 phr of a bismaleimide (including a phenylene bismaleimide as well as diphenylmethane bismaleimide- esp. paragraphs [0027] to [0028]), it being considered reasonable to expect that in view of the apparent indication in the present specification that phenylene and diphenylmethane bismaleimide's are suitable and effective as the added compound, that it would satisfy the claimed very broad requirements with respect to melting/softening point. Thus, insofar as the rubber compositions suggested by these references may include amounts of a bismaleimide compound/resin that would reasonably be expected to meet the present claim requirements, these compounds being expressly described as desirable for steel cord reinforced tire belt plies, it would have been obvious to use such with any steel cord ply

for only the expected results. Sulfur, cobalt, sulfenamide accelerators as claimed are likewise extremely well known and obvious in this environment for only the expected results.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Itoh et al. (US 4,818,601) and Yamamoto (US 4,933,385) are other examples of rubber/cord composites that include bismaleimides but are no more relevant than the applied prior art.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey L. Knable whose telephone number is 571-272-1220. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Geoffrey L. Knable
Primary Examiner
Art Unit 1733

G. Knable
June 6, 2006